CLAIMS

1. A chemical-mechanical-polishing slurry composition for polishing and ablating an oxide layer selectively in relation to a nitride layer, the chemical-mechanical-polishing slurry composition comprising ceria polishing particles, a dispersing agent, and an anionic additive,

wherein the anionic additive is added to control a concentration of the anionic additive so that a polishing-rate selection ratio of an oxide layer to a nitride layer is 40 : 1 or greater.

2. A chemical-mechanical-polishing slurry composition according to Claim 1,

wherein a particle size of the ceria polishing particles is controlled to be within a predetermined range.

3. A chemical-mechanical-polishing slurry composition according to Claim 1,

wherein the ceria polishing particles are polycrystalline particles.

4. A chemical-mechanical-polishing slurry composition according to Claim 1,

wherein the anionic additive is water-soluble polyacrylic

acid or water-soluble polycarboxylate.

5. A chemical-mechanical-polishing slurry composition according to Claim 1,

wherein a concentration of the anionic additive is from 0.1 to 0.6 wt% in relation to a whole percentage of the slurry composition.

6. A method for planarizing a surface of a semiconductor device comprising:

a step of preparing a semiconductor substrate in which a level difference is formed on a surface thereof and a nitride layer is formed at least on an upper level surface of the level difference;

a step of depositing an oxide layer which is for filling the level difference and planarizing the surface of the semiconductor substrate so that a predetermined thickness of the oxide layer can be added to a surface of the nitride layer; and

a step of ablating the oxide layer by a chemical-mechanical-polishing process so as to expose the surface of the nitride layer,

wherein in the chemical-mechanical-polishing process, a chemical-mechanical-polishing slurry composition is used, and

the chemical-mechanical-polishing slurry composition includes ceria polishing particles, a dispersing agent, and an

anionic additive, in which the anionic additive is added to control a concentration of the anionic additive so that a polishing-rate selection ratio of an oxide layer to a nitride layer is 40 : 1 or greater.

7. A method for planarizing a surface of a semiconductor device according to Claim 6,

wherein the level difference is a trench area formed on the surface of the semiconductor substrate.

8. A method for planarizing a surface of a semiconductor device according to Claim 6,

wherein the method further comprises a step of ablating the oxide layer by a chemical-mechanical-polishing process in which a silica slurry is used before the surface of the nitride layer is exposed.

9. A method for planarizing a surface of a semiconductor device according to Claim 6,

wherein the ceria polishing particles are polycrystalline particles.

10. A method for planarizing a surface of a semiconductor device according to Claim 6,

wherein the anionic additive is water-soluble polyacrylic

acid or water-soluble polycarboxylate.

11. A method for planarizing a surface of a semiconductor device according to Claim 6,

wherein a concentration of the anionic additive is from 0.1 to 0.6 wt% in relation to a whole percentage of the slurry composition.

12. A method for planarizing a surface of a semiconductor device according to Claim 6,

wherein the oxide layer is a silicon oxide layer, and the nitride layer is a silicon nitride layer.

13. A method for controlling a selection ratio of a chemical-mechanical-polishing slurry composition for polishing and ablating an oxide layer selectively in relation to a nitride layer, the method comprising:

a step of confirming a selection ratio of an oxide layer to a nitride layer of a chemical-mechanical-polishing slurry composition which includes ceria polishing particles, a dispersing agent, and an anionic additive, while a concentration of the anionic additive is changed; and

a step of adjusting the concentration of the anionic additive to attain a desired selection ratio of the slurry composition, on the basis of the confirmed polishing-rate selection ratio,

thereby controlling the selection ratio of the slurry composition.

14. A method for controlling a selection ratio of a chemical-mechanical-polishing slurry composition according to Claim 13,

wherein the method further comprises a step of confirming the polishing-rate selection ratio of the oxide layer to the nitride layer, while a particle size of the ceria polishing particles is changed.

15. A method for controlling a selection ratio of a chemical-mechanical-polishing slurry composition according to Claim 13,

wherein the ceria polishing particles are polycrystalline particles.

16. A method for controlling a selection ratio of a chemical-mechanical-polishing slurry composition according to Claim 13,

wherein the anionic additive is water-soluble polyacrylic acid or water-soluble polycarboxylate.

17. A method for controlling a selection ratio of a chemical-mechanical-polishing slurry composition according to Claim 13,

wherein the concentration of the anionic additive is from 0.1 to 0.6 wt% in relation to a whole percentage of the slurry composition.